Risk Assessment Process (10 January 2001)

Presented By:

Hank Hinkle

NAVAIR Risk Assessment Coordinator

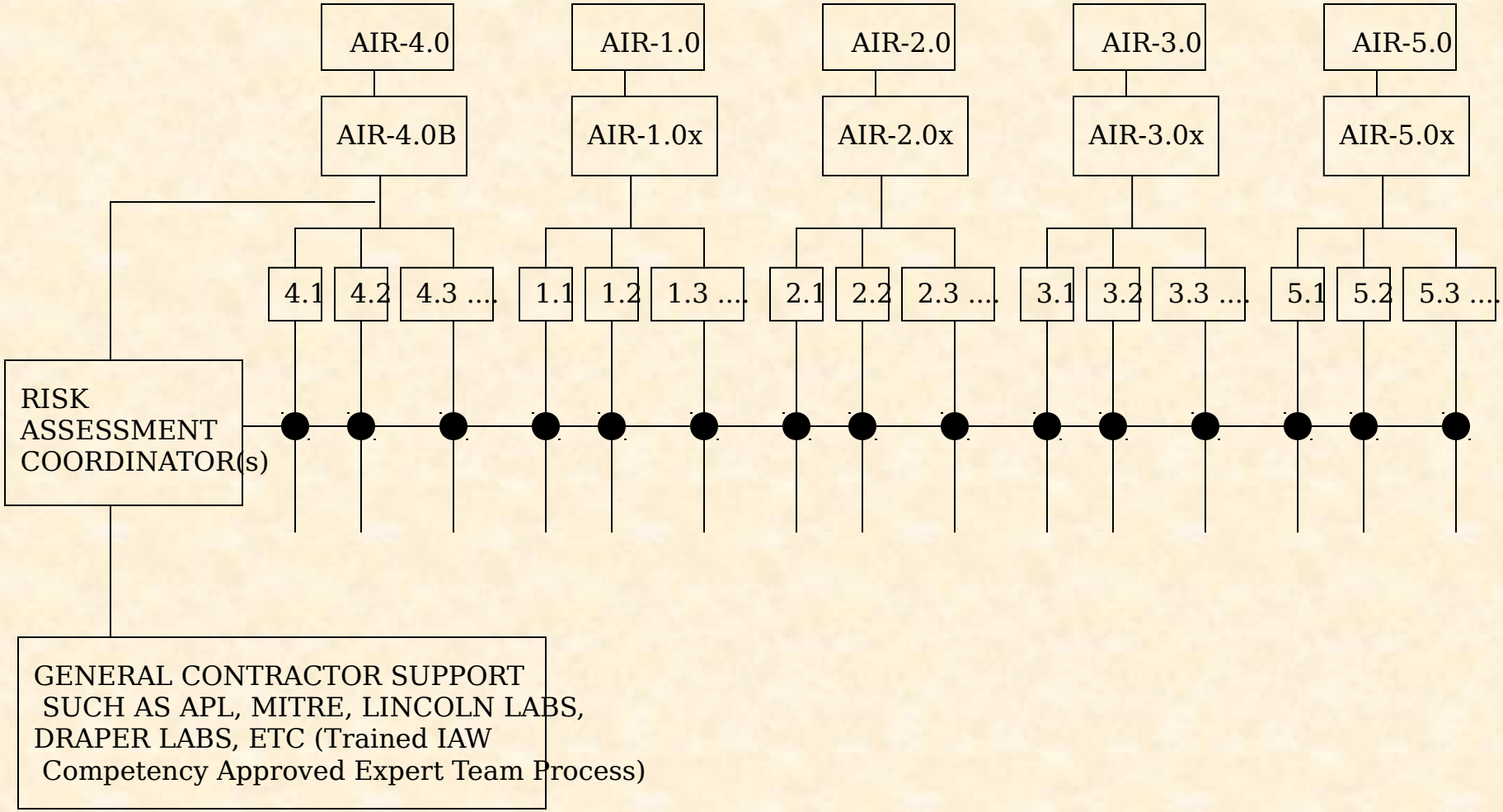
Agenda

- Background
- Risk Assessment Process Expert Team
- Independent Assessors
- Risk Assessment Overview
- Technical Risk Assessment
- Schedule Risk Assessment
- Cost Risk Assessment
- Pilot Process Status
- Process Deployment Deliverables
- Summary

Background

- Acquisition Management Business Process Re-Engineering (BPR) Tasked to Create Standardized NAVAIR Risk Assessment Process
- Process Incorporates Development of AIR-4.0 Independent Assessment (IA) Capability
  - ASN/RDA Acquisition Reform Office Will Provide Assistance In Select Areas (Surge Capability)
  - Process Under development Requiring IA to Support SDR, PDR, CDR, & OTRR for ACAT I Programs

Risk Assessment Process
Expert Team Within NAVAIR



Independent Assessment Support Requested From ARO

- Provide Independent View of Area Specific Program Risks
- “Hand Picked” By NAVAIR Competency Leads
- Execute Risk Assessments IAW NAVAIR Risk Assessment Process & Competency Process Assessment Criteria

Risk Assessment Processes Overview

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NAVAIR Risk Assessment Coordinator

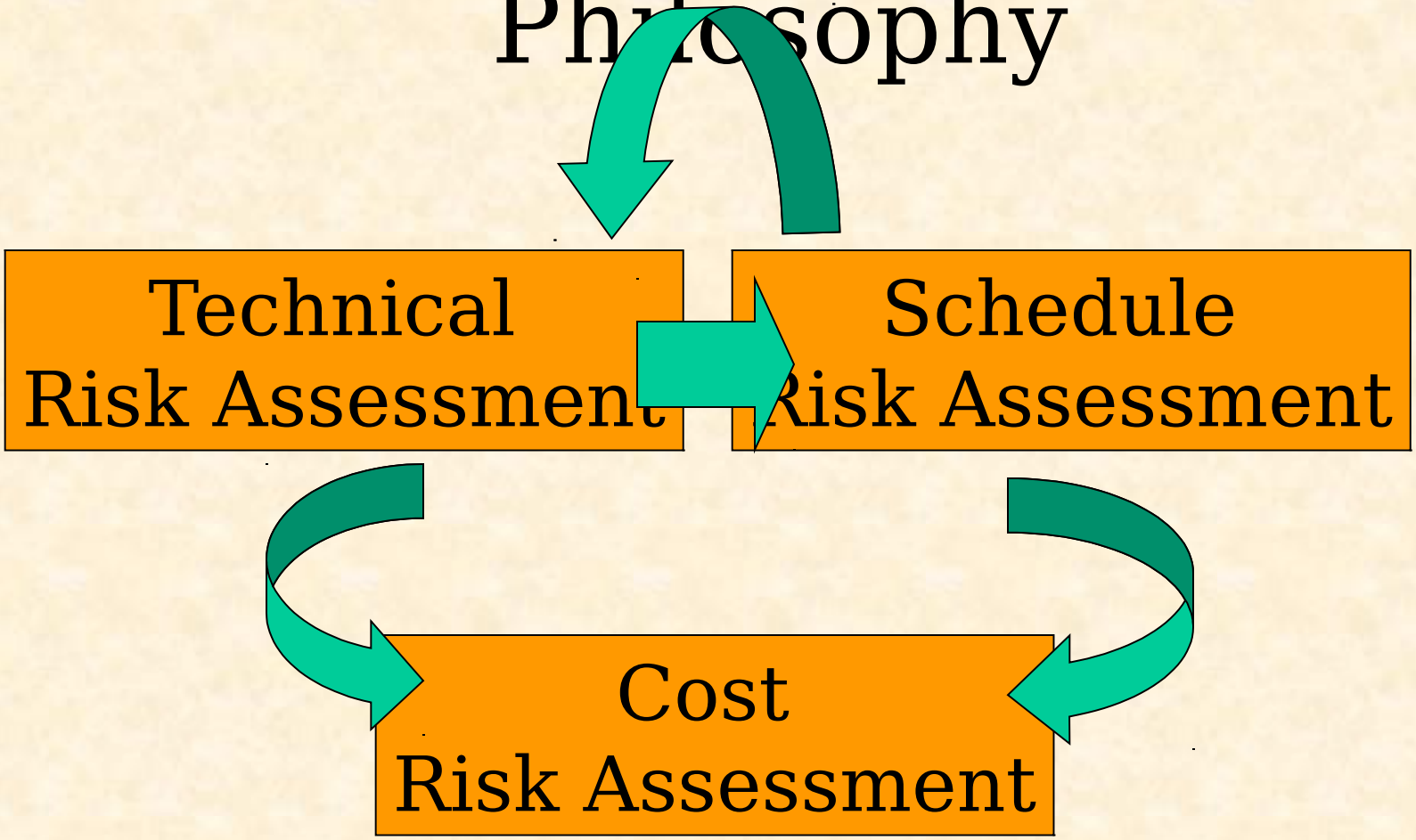
Process Requirements/Characteristics

- Capable of program technical, schedule, & cost risk assessment.
- Provides risk characterization to support development of risk mitigation plans.
- Capable of execution to support program incremental reviews: System Design Review, Preliminary Design Review, Critical Design Review, and Operational Test Readiness Review.
- Implements a repeatable approach to risk identification and analysis.
- Executable for independent or self risk assessments.
- Capable of implementation within the Naval Air Systems Command organization.

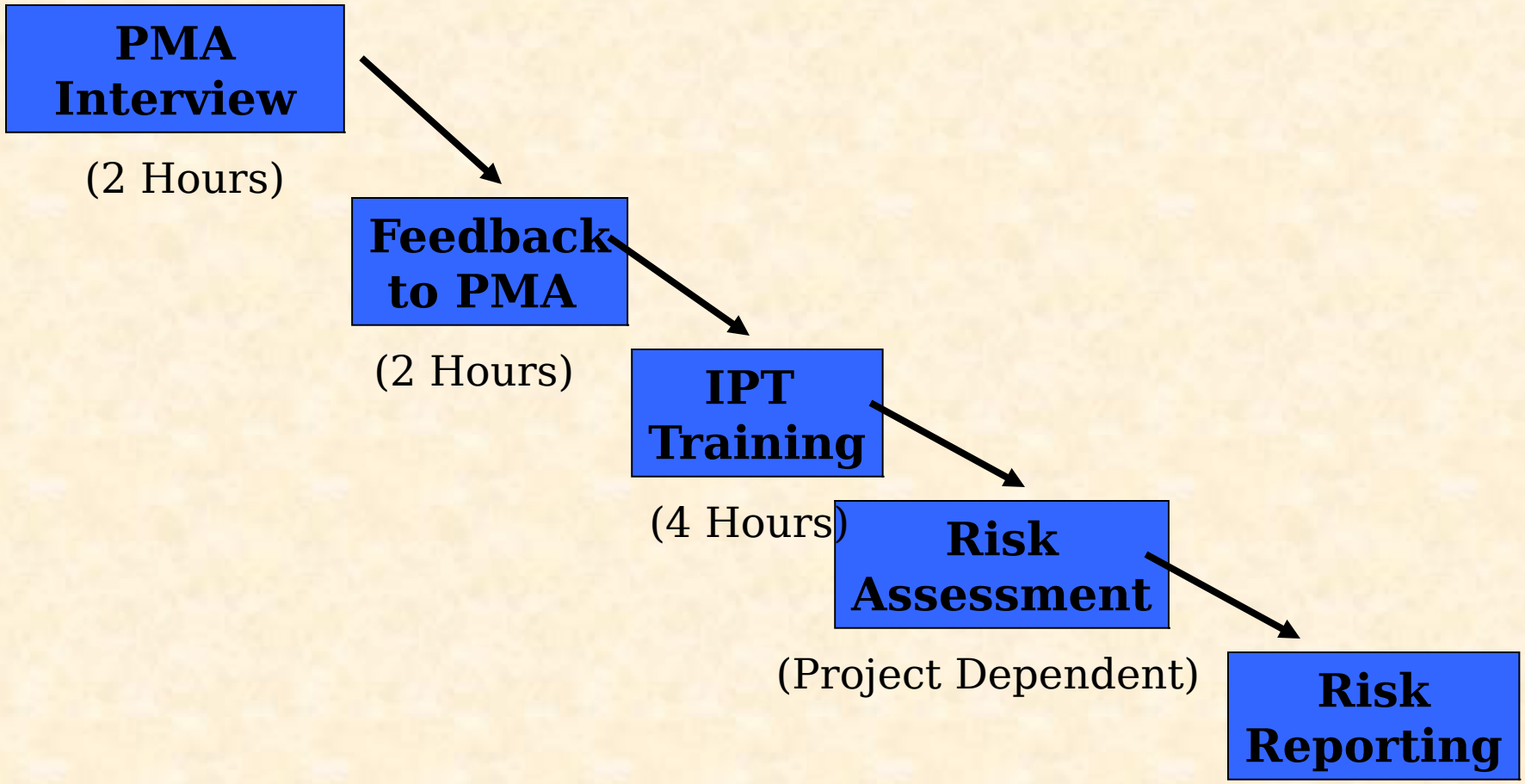
Process Requirements/Characteristics "Continued"

- Represents/Assesses against process best practices
- Maintainable, modifiable, and upgradeable through competency process owner (AIR-4.1) within Naval Air Systems Command
- Capable of implementation by any acquisition professional community (APC) certified engineer.
- Executable during all program phases (phase 0 through IV or IAW 5000 series dated 23 Oct, 2000).
- Permits DoD 5000.2 compliance and implements concepts identified in NAVSO P-3686 (Top Eleven Ways To Manage Risk) and "Risk Management Guide For DoD Acquisition".

Risk Assessment Philosophy



TOP LEVEL RISK ASSESSMENT PROCESS FLOW



Technical Risk Assessment Process

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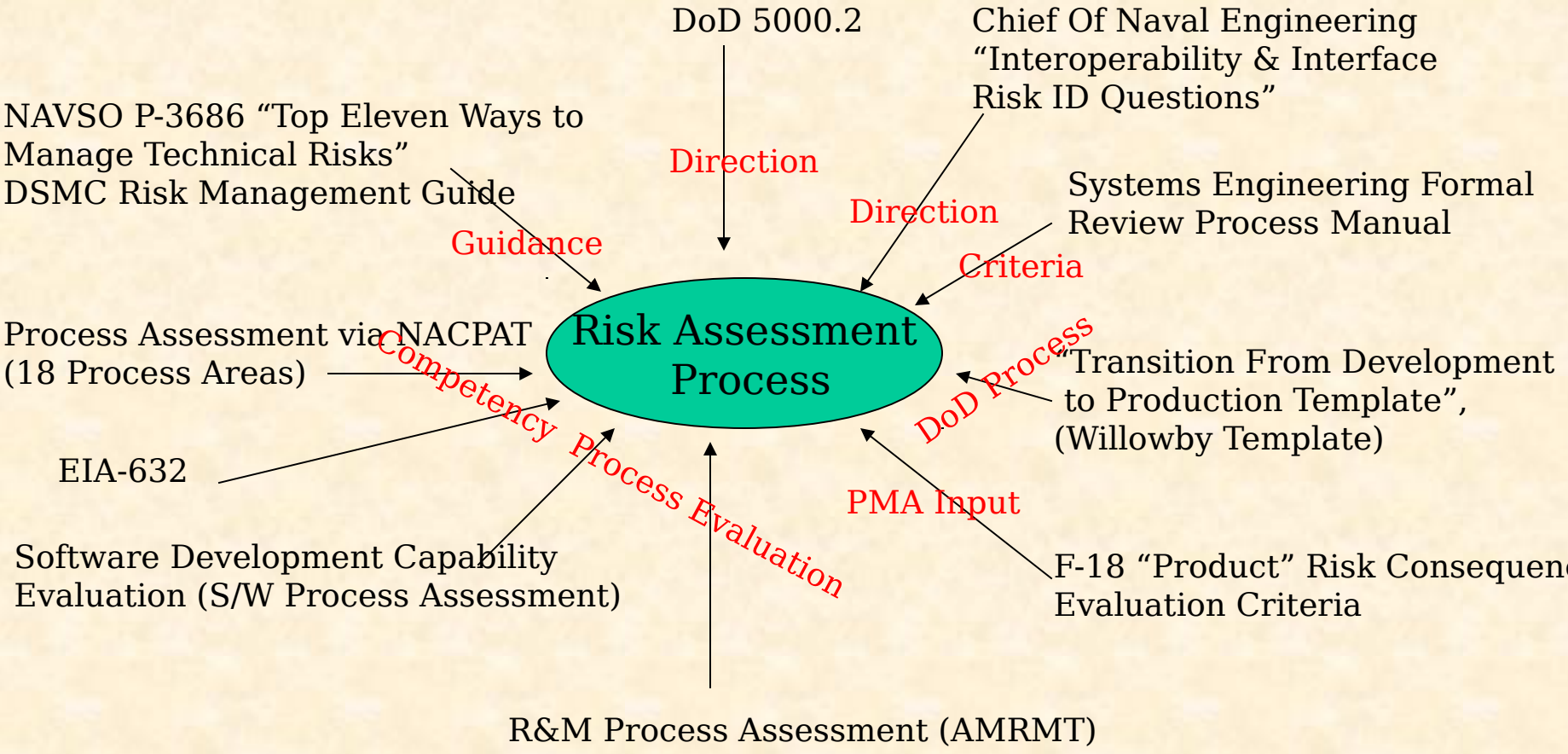
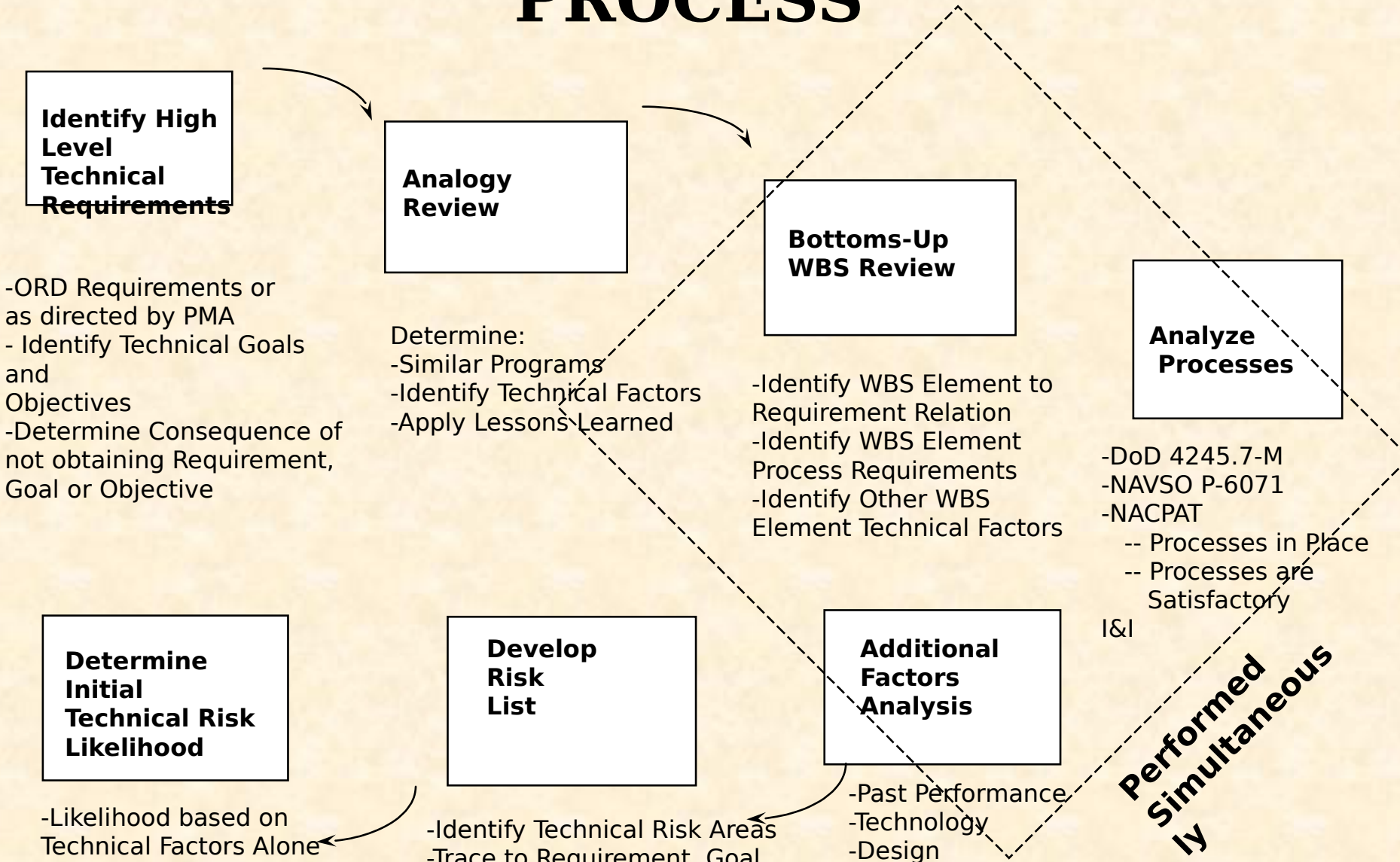
Technical Risk Assessment Process Development Interfaces



TECHNICAL ASSESSMENT PROCESS



Risk Traceability

- **Program Risks are assessed from program documentation for Technical-Schedule-Cost and traceable to requirements in the:**
  - **ORD**
  - **APBA**
  - **Acquisition Strategy**

  } **Acquisition Manager's contract with DoD Manage**
  - **TEMP**
  - **Performance Specification**
  - **Contract**
- **Technical Risk traceable to ORD performance requirement.**
- **Schedule/Cost Risk traceable to the Acquisition Program Baseline Agreement.**
- **Risk Traceability facilitates PMA standard reporting**

Naval Aviation Critical Process Assessment Tool (NACPAT)

- Phased questions and criteria for program processes
- Collection of 18 process areas
- Facilitator will guide discussion in appropriate process area
- Provides a modular approach to risk assessment

Integration & Interoperability

- I&I Knowledge Base Developed by Chief of Naval Engineering Office
- Early Warning System for PEOs/PMs in Communicating Risk From One Program/system to Interfacing Programs/systems
- Support ASN RDA/MDA Oversight of Acquisition Programs (Currently Only PEO TSU Programs but Will Expand)
- Incorporated I&I Knowledge Base in Our SE NACPAT

Transition From Development to Production Template

- Assesses Risk Associated With Phased Transition
- Addresses Design, Test, and Production
- Discusses Area of Risk by Work Area and Provides an Outline for Reducing Risk

Additional Factors

- Addresses areas like past performance, technology, design, architecture, etc.
- Bring yourself to the job
  - Individual expertise
  - Thoughts
  - Concerns
  - Lessons Learned

Summary

- Implements Step-By-Step Process For Technical Risk Assessment
- Provides PM Risks at “Product” and “Program” Levels
- Provides Standardized Process Resulting in Standardized Results
- Incorporates DoD, CHENG, and NAVAIR Competency Process Assessments
- Provides Basis For Proactive Risk Management

Schedule Risk Assessment

Bob Wilhelm
Risk Assessment Expert team

SCHEDULE ASSESSMENT PROCESS

Identify High Level Schedule Requirements

-Schedule and Milestones From APBA or as directed by PMA
-Determine Consequence of not Obtaining Program Milestones

Analogy Review

-Identify Similar Programs or Activities
-Apply Lessons Learned and determine Likelihood for Similar Elements

Apply Technical Assessment Results

-Tech risks identified during WBS review
-"Additional Factors"
- Developmental schedule (time) risk(s)

Apply Risk/Readiness to New Technology

-Apply to new technology
--Assess Phase Requirement from Tables
--Assign Initial Schedule Likelihood for Development Remaining

Document Schedule Risk

-Traceable to Program Requirement
-Input to Integrated Risk

Apply Risk/Readiness to New Technology

- **Apply to COTS & new technology**
- **Assess Phase Requirement from Tables**
- **Assign Initial Schedule Likelihood for Development Remaining**
- **Addresses Technology, Design maturity, and manufacturing using look-up tables**
- **Supports New DoD 5000 Series Direction**

Summary

- Based on NASA Schedule Risk Assessment Model
- Leverages Use of Analogous Programs in Assessments
- Provides Simple Calculation of Schedule Risk Based on Look-up Tables
- Currently Updating to Accommodate New DoD 5000 Program Phasing

Cost Risk Assessment Process

Bob Wilhelm Presenting For

Donna Snead

Cost Risk Assessment Lead

(AIR 4.2)

THE COST ASSESSMENT PROCESS

Define Scope/Purpose

Determine:
-Type of Program
-Type of Contract
-Use of Estimate

Identify and Gather Data

-Programmatic Information
-Technical Information
-Baseline Cost Estimate
-Schedule/Technical Risk Assessment
-Earned Value Management Data

Determine Potential Cost Risk Methodologies

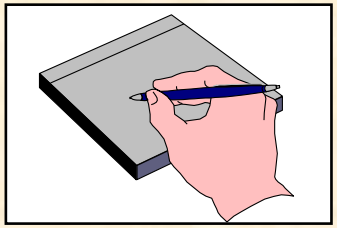
-Analogous
-Parametric
-Monte Carlo
-Other Risk Quantification Methods

Analyze Data/ Select Cost Risk Tool

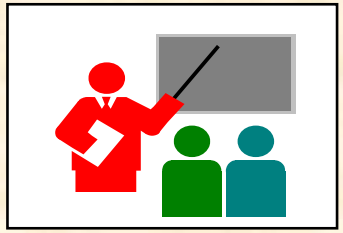
-Normalize Data
-Consider Crystal Ball, @Risk, ACEIT

Accomplish Cost Risk Estimate and Cross Check

-Apply Estimating Techniques
-Incorporate TA & SA Outputs
-Quantify Technical, Schedule, Cost Est Risk
- Cost Risk $/Baseline Cost Estimate



-Review Cost Risk Estimate and Present



-Document Estimate
-Perform Integrated Assessment with SA and TA

Cost Risk Assessment Summary

- Managed by AIR-4.2
- Fed by technical and schedule assessments
- Outputs
  - Cost of risk
  - Risk of cost estimate

Risk Evaluation & Reporting

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NAVAIR Risk Assessment Coordinator

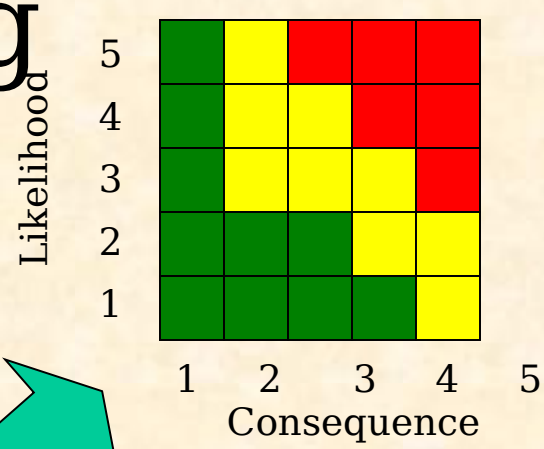
Risk Evaluation & Reporting

- Risk Evaluated via Tiered Approach
  - Product Level (Contractor/Subcontractor Specification Risk)
  - Program Level (Risk to ORD/APB Requirements)

Note: Risk/Requirements Traceability is Paramount

“Product” Risk Evaluation and Reporting

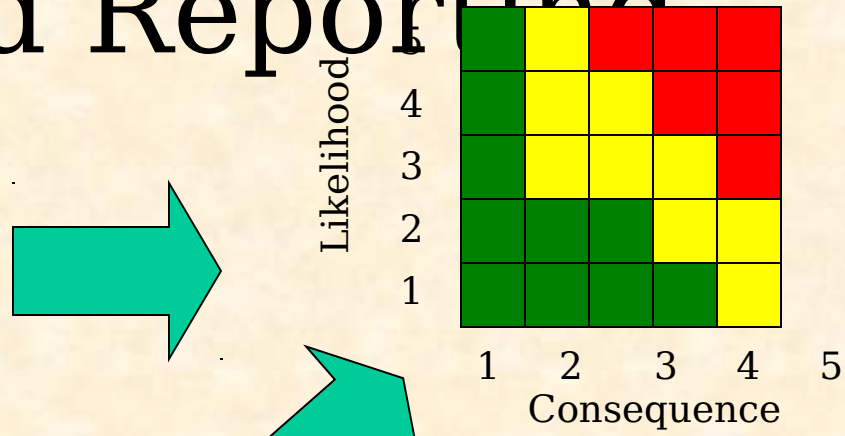
Level	Likelihood
1	Not Likely
2	Low Likelihood
3	Likely
4	Highly Likely
5	Near Certainty



	Consequence		
Level	Technical	Schedule	Cost
1	Minimal or no impact	Minimal or no impact	Minimal or no impact
2	Mod. Reduction, Same Approach Maintained	Add Activities Required Able to Meet Need dates	Budget Increase < 5% Or Unit Product $ Impact
3	Mod. Reduction, Workarounds Available	Minor Slip in Key Milestone Not Able to Meet Need Dates	Budget Increase > 5% Or Other Teams Impacted Or Can’t Meet unit Prod $
4	Major Reduction,	Key Milestone Slip>1 Mo, Or	Budget Increase >10% Or

"Program" Risk Evaluation and Reporting

Level	Likelihood
1	Not Likely
2	Low Likelihood
3	Likely
4	Highly Likely
5	Near Certainty



	Consequence		
Level	Technical	Schedule	Cost
1	Minimal or no impact	Minimal or no impact	Minimal or no impact
2	Add Activities Required Able to meet ORD Thresholds & Objectives	Add Activities Required Able to meet Key Milestones	Note (1)
3	Can't Achieve Objectives Able to meet ORD Thresholds	Minor Schedule Slip No Impact to Key Milestones	Note (2)
4	All Margin Exhausted Able to meet ORD Thresholds	Program Critical Path Affected All Schedule Float Associated With Key Milestones Exhausted	Note (3)
5	Can't Achieve	Can't Achieve	Note (4)

Cost Consequence Notes

- **Note 1: Insert:** > APB Objective and <(APBA Objective +0.33 (APBA Threshold - APBA Objective))
- **Note 2: Insert:** >(APBA Objective +0.33 (APBA Threshold - APBA Objective)) and <(APBA Objective +0.66 (APBA Threshold - APBA Objective))
- **Note 3:Insert:** >(APBA Objective + 0.66 (APB Threshold - APB Objective)) and <(APBA Threshold)
- **Note 4: Insert:** >APBA Threshold

Pilot Risk Assessment Process Status

Presented By:

Hank Hinkle

Risk Assessment Expert Team Leader

Process Pilots Status

- Active Electronically Scanned Array (AESA) (Nearly Complete)
- Electromagnetic Aircraft Launch System (EMALS)
  - Jan-Feb 01
- Marine Corps Simulator Training System
  - Tentative Feb 01
- Tactical Tomahawk
  - TBD

Process Deployment Deliverables/Status

- “Draft” Instruction
  - Requires Use of Expert Team on All ACAT I Programs
  - Requires Independent Assessment of Select Process Areas To Support ACAT I Program SDRs, PDRs, CDRs, and OTRRs
  - Requires Use of Process on All Programs
- “Draft” Expert Team Operating Guide (Team CONOPS)
- “Draft” Risk Assessment Process Handbook
- “Draft” Training Package used on Pilot Programs
  - Training planned for NAVAIR Wide Deployment

Summary

- Process Creates a “Standardized” Approach for Risk Assessments
- Process Facilitates Independent Assessment of “Key” Program Areas
- Process Is in Concert With Existing DoD Policies/Directives
- We Believe Process Is “Good” and Will Provide Valid Results
- Pilot Programs Will Serve to Make Process More Effective and Efficient
- Risk Reporting Briefs to PEOs Need to Be Coordinated

Backups

NACPAT Process Areas

- Program Management
- System Engineering
- Risk Management
- Quality Assurance
- Manufacturing
- Reliability Engineering
- Maintainability
- Configuration Management
- Design Engineering
- Survivability
- Safety
- Mass Properties
- Parts, Materials, Packaging
- Human factors
- T&E
- ILS
- Software Engineering (SDCE Model)
- EMI/EMC